5. (New) The device of claim 1 in which the conductive coil means comprises a plurality of coil loops which are configured tightly about the thoracic region and the abdominal region of the mammal.

6. (New) The device of claim 1 further comprising sensing and control means for controlling operation of the device, the sensing and control means being electrically connected to the conductive coil means, the fixed coil means, and the current generating means.

7. (New) The device of claim 6 in which the sensing and control means comprises timing and multiplex switching means for providing simultaneous volume measurements of both a thoracic region and an abdominal region of the mammal.

8. (New) The device of claim 7 in which the sensing and control means comprises multiplexing means for providing simultaneous measurement of a plurality of regions of the mammal utilizing either phase, frequency or time multiplexing.

9. (New) The device of claim 1 in which the current generating means comprises a constant current circuit to maintain the current in the conductive coil means constant regardless of the dynamic variations of portions of the conductive coil means that are configured tightly about the various circumferences of at least one portion of the mammal.

10. (New) The device of claim 1 in which the current generating means comprises a signal generator and a constant current amplifier electrically connected to the coil means which is receiving the generated current.

11. (New) The device of claim 1 in which the sensing and control means comprises an amplifier and a rectifier electrically connected to the coil means that is receiving the induced voltage from the other coil means.

12. (New) The device of claim 2 in which the conductive coil means are electrically connected in series so that the instantaneous volume V may be calculated from the voltage reading U of the volume output signal in the coil means which is receiving the induced voltage by use of the formula

$$V = U \cdot d \cdot k_c$$

wherein d is the spacing between the coils;

and $k_c = a_c / U_c$;

wherein a_c is the area of a reference coil, and U_c is the voltage reading of the volume signal when a calibration coil is attached.

13. (New) The device of claim 1 in which the fixed coil means comprises a plurality of small coil elements that are configured for matching and positioning to permit the fixed coil means to generate a homogeneous magnetic field similar to a single large coil for either sensing an

induced voltage from the conductive coil means or for generating a field to create an induced voltage in the conductive coil means.

14. (New) The device of claim 13 in which the plurality of small coil elements comprises three small coil elements.

A1

15. (New) The device of claim 14 in which each of the small coil elements is wound on a ferrite core and arranged linearly with optimized positions and signal intensity weighting to generate a homogeneous magnetic field at the portion of the mammal being measured.

16. (New) The device of claim 1 in which the conductive coil means comprises electrically conductive coil loops that are equally spaced and carried by an elastic and conformable substrate that is suitable for wearing by the mammal in a manner similar to a tightly fitting garment which is configured so that the coil loops always conform to the same surface of the portion of the mammal regardless of any shape change which that portion of the mammal may experience during respiration.

17. (New) The device of claim 1 in which the conductive coil means comprises electrically conductive coil loops that are spaced at constant and known intervals and which are carried by an elastic and conformable substrate that is suitable for wearing by the mammal in a manner similar to a tightly fitting garment which is configured so that the coil loops always conform to the same

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surface of the portion of the mammal regardless of any shape change which that portion of the mammal may experience during respiration.

18. (New) The device of claim 1 further comprising computational means for receiving a signal representative of sensed volume of the portion of the mammal and for converting the signal to true volume values.

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19. (New) A device for measuring the changing area within at least one portion of a mammal due to cardiac function, comprising:

a. conductive coil means configured tightly about the various circumferences of at least one portion of the mammal;

b. fixed coil means remotely located relative to the conductive coil means about the mammal; and,

c. current generating means for selectively providing alternating current to either one of the conductive coil means or the fixed coil means to create an induced voltage in the other coil means representative of true area within the coil means that is configured tightly about the various circumferences of the mammal portion or portions, with the signals and area changing over time due to the cardiac function of the mammal.

20. (New) The device of claim 19 in which the conductive coil means comprises electrically conductive coil loops that are equally spaced on a flexible substrate that is suitable for wearing by the mammal.

21. (New) The device of claim 19 in which the conductive coil means comprises electrically conductive coil loops that are closed circumferential loops.

22. (New) The device of claim 19 in which the current generating means generates current with a frequency range of about 10 kHz to about 200 kHz and from about 1 milliampere to about 1 ampere.

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23. (New) The device of claim 19 in which the conductive coil means comprises a plurality of coil loops which are configured tightly about the thoracic region and the abdominal region of the mammal.

24. (New) The device of claim 19 further comprising sensing and control means for controlling operation of the device, the sensing and control means being electrically connected to the conductive coil means, the fixed coil means, and the current generating means.

25. (New) The device of claim 24 in which the sensing and control means comprises timing and multiplex switching means for providing simultaneous area measurements of both a thoracic region and an abdominal region of the mammal.

26. (New) The device of claim 25 in which the sensing and control means comprises multiplexing means for providing simultaneous measurement of a plurality of regions of the mammal utilizing either phase, frequency or time multiplexing.

27. (New) The device of claim 19 in which the current generating means comprises a constant current circuit to maintain the current in the conductive coil means constant regardless of the dynamic variations of portions of the conductive coil means that are configured tightly about the various circumferences of at least one portion of the mammal.

28. (New) The device of claim 19 in which the current generating means comprises a signal generator and a constant current amplifier electrically connected to the coil means which is receiving the generated current.

29. (New) The device of claim 19 in which the sensing and control means comprises an amplifier and a rectifier electrically connected to the coil means that is receiving the induced voltage from the other coil means.

30. (New) The device of claim 20 in which the conductive coil means are electrically connected in series so that the area A may be calculated from the measured voltage U of a single coil loop which is receiving the induced voltage by use of the formula

$A=U \cdot k$

wherein $k_c = a_c / U_c$; and

wherein a_c is the area of a reference coil, and U_c is the voltage reading of the volume signal when a calibration coil is attached.

31. (New) The device of claim 19 in which the fixed coil means comprises a plurality of small coil elements that are configured for matching and positioning to permit the fixed coil means to generate a magnetic field similar to a single large coil for either sensing an induced voltage from the conductive coil means or for generating a field to create an induced voltage in the conductive coil means.

32. (New) The device of claim 31 in which the plurality of small coil elements comprises three small coil elements.

33. (New) The device of claim 32 in which each of the small coil elements is wound on a ferrite core and arranged linearly with optimized positions and signal intensity weighting to generate a homogeneous magnetic field at the portion of the mammal being measured.

34. (New) The device of claim 19 in which the conductive coil means comprises electrically conductive coil loops that are equally spaced and carried by an elastic and conformable substrate that is suitable for wearing by the mammal in a manner similar to a tightly fitting garment which is configured so that the coil loops always conform to the same surface of the portion of the

mammal regardless of any shape change which that portion of the mammal may experience during cardiac function.

35. (New) The device of claim 19 in which the conductive coil means comprises electrically conductive coil loops that are spaced at constant and known intervals and which are carried by an elastic and conformable substrate that is suitable for wearing by the mammal in a manner similar to a tightly fitting garment which is configured so that the coil loops always conform to the same surface of the portion of the mammal regardless of any shape change which that portion of the mammal may experience during cardiac function.

36. (New) The device of claim 19 further comprising computational means for receiving a signal representative of sensed area of the portion of the mammal and for converting the signal to true area values.

REMARKS

Claims 1-36 are pending. By this Amendment, new claims 4-36 are added. Applicant respectfully requests that the present amendment be entered before the calculation of filing fees.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.